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THE VALUE OF CROSS-CULTURAL POLYLOGUE IN SCIENCE

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Abstract:

This paper adds to much existing knowledge of reasons to be pluralist about science and its methods. The pluralism that I defend rebuts Karl Popper and some other philosophers, such as the early logical positivists, who contend (actually, often simply assume) that there are universal procedures, laws or methods that are defining of science, and so are applicable to all fields of scientific enquiry. Philosophers like Stephen Kellert and Helen Longino have defended respectively the thesis of pluralism about occidental science and the related thesis that its epistemologies (in the plural) are "local" not only within cognitive geography at a time but also historically. Building on this, I move further in this paper to defend a *cross-cultural* epistemic pluralism, broadening the idea of local epistemologies so that it concerns as well inquiry concerning the world in systematic indigenous societies.

Keywords: Cross-cultural polylogue, epistemic pluralism, falsificationism, scientific method, Universalism

Introduction

This paper adds to much existing knowledge of reasons to be pluralist about science and its methods. The pluralism that I defend rebuts Popper and some other philosophers, such as the early logical positivists, who contend (actually, often simply assume) that there are universal procedures, laws or methods that are defining of science, and so are applicable to all fields of scientific enquiry. What they contend or assume does not allow for the possibility that I explore here, that 'science' (or 'scientific') is a family-resemblance term in Wittgenstein's sense, variously applicable to kinds of inquiry that share no one set of

characteristics in common. Philosophers like Stephen Kellert and Helen Longino have defended respectively the thesis of pluralism about occidental science and the related thesis that its epistemologies (in the plural) are "local" not only within cognitive geography at a time but also historically. Building on this, I move further in this paper to defend a *cross-cultural* epistemic pluralism, broadening the idea of local epistemologies so that it concerns as well inquiry concerning the world in indigenous societies.

I shall defend the value of cross-cultural polylogue. My proposal is that when two cultures, for instance, dialogue, ideally people in both cultures learn from their understanding of the other an expanded sense of the possible. This would represent the possibilities of mutual benefit if there is intelligent dialogue concerning the differences and the commonalities.

Over and above this, I shall claim that there is a socio-cultural character to the development of science, to the extent that the methods of inquiry in science, and the views that its practitioners will adopt concerning their subject matter, in the questions that are asked and in the choices concerning what work will be carried out, are significantly a function of culture and of a cultural history that will be unique to a time and a place. I shall thus in a strong manner argue against universalism in scientific method.

The thesis that I defend about pluralism here is two-fold:

1. I shall argue on the one hand that by virtue of its ramification into various sub-disciplines, each with a distinctive culture of its own, occidental science, neither in its theoretical thinking, nor by extension in its methods, is at all a monolithic enterprise. I do acknowledge that in its interdisciplinarity science can often benefit from the act of "borrowing of knowledge from one field in order to assist the endeavours of another discipline" (Kellert 2006: 219). However, in spite the tying-together that this creates, each field of science remains distinctive from others. This is the basis of the scientific pluralism that Stephen Kellert and Helen Longino[1] including a number of more recent philosophers of science defend.
2. On the other hand, I shall argue that if we consider inquiry outside the West, acknowledging that every society has unique and distinct and multiple forms of inquiry, we should be impressed not only that there is distinctiveness elsewhere but that polylogue between occidental science (which is rationality based) and other kinds of inquiry

[1] See Stephen H. Kellert, Helen E. Longino and Kenneth Waters (eds) (2006)

elsewhere stands to inform occidental science in new ways, as well as stands to inform those other kinds of inquiry in new ways.

1. Thesis 1: Methodological Pluralism in Science

The thesis that science is to become one unified entity theoretically, or alternatively, that there is a unity of method in science is central to the argument of the unity of science or a unified method in science that Popper and some others endorse. The Logical Positivists and the subsequent philosophers of science of the twentieth century including Popper would readily attest to the one claim or the other or both. They assume that all the sciences share a common method. Even though these scholars do not reach an ostensible agreement over what this common method is, they share the assumption that science as such follows one and the same universal method across all its sub-disciplines and through the entire history of its development.

Popper and some other philosophers of science long assumed that there would be unity to science at least concerning its methods, if not also concerning its theories. They hold methods in scientific inquiry to be single and monolithic that all scientific theories are derived from. Popper's assumption is that falsification is a single specifiable system of method which can be taken as a paradigm of all the sciences. With his "doctrine of the unity of method; that is to say, the view that all theoretical and general sciences use the same kind of method, whether they are natural science or social sciences" (Popper 1957: 130) Popper emphatically describes the workings in natural science where "we are always concerned with explanations, predictions, and tests, and that the method of testing hypotheses is always the same" (ibid: 132). For this method of all the sciences, Popper says, we must proceed to test theories severely as much as we can in other to find fault with them; in fact, we must try to falsify them. Only if we cannot falsify them in spite of our best efforts can we say that are corroborated, that is, they have stood up to severe tests. This is the method of falsification (ibid: 134). It is the method which holds that any claims to knowledge can be rationally criticised, and in the realm of science, such claim to knowledge is to be subjected to the tests of refutation in order to be termed scientific. The progress of knowledge, in Popper's view, is concerned with falsification or error elimination (conjecture and refutation) in a bid to allowing our most valued sets of knowledge or scientific theories to either stand the test of time or be replaced by superior arguments or new scientific theories.Those claims to knowledge that are potentially falsifiable can be admitted to the body of empirical science, and then further distinguished according to whether they are falsified or indeed are actually

retained. If retained, yet further distinction may be made on the basis of how much subjection to criticism they have received, how severe such criticism has been, and how probable the theory is, with the least probable theory that still withstands attempts to falsify it being the one to be preferred. This is the criteria Popper used in distinguishing science from non-science. So any scientific statements must satisfy this falsification criterion. This falsification criterion is the only method, according to Popper, which underlies the testing of theories or hypothesis in science.

The above description of Popper's theory of falsification pervades the acclaimed unified methodological procedure for the workings of science found in the argument that concerns the unity of method and unity of theory in science. The latter kind of unity would require reductivism to hold. The former, methodological kind of unity would not: even if reductivism as a thesis that all theory collapses to one theory fails, the thesis of unity of method could still be true; or so Popper assumes. However, the problem is whether at the level that we must operate at, of abstraction away from specifics of theory and subject matter, there really is much to remark, as common to all inquiries, and all stages of the development of those inquiries, through all manner of different forms of theoretical commitment. Surely whether there is anything much out there to remark is debatable. Now, if there is nothing, if method truly is more technique than the nomenclature well allows us to see, if method is therefore theory-dependent and liable to be subject-matter-specific, then we would be wrong to expect the two questions, of unity of theory, and of unity of method, truly to come apart from one another. The argument that there is no unity of theory (that reductivism fails) would begin after all to supply reasons to expect no unity of method but rather plurality of methods. That is, anti-reductivism (such as Nancy Cartwright's) about theory would support pluralism about method. It is also my contention that a reductionist thesis of either sort is not apt: the sciences are a plurality, both theoretically, and methodologically. Otto Neurath's (1934: 353) aligns with this argument and berates Popper's falsificationism, which allegedly presupposes a single correct approach that excludes plurality practice in science. In other words, there cannot be a unity of laws in science that explain the whole diversity of natural phenomena. As well as the fact that there could not be one method that remains the same across all the various sub-disciplines of science across the whole history of their developments.

Again, I question here whether there is one single self-consistent method for achieving the aim or progress towards objective truth in science. The issue is whether progress towards the goal of science is regulated by a single self-consistent method, any more than achievement of it is bound up in a single self-consistent master or reducing theory. I

doubt whether science can be made a unity theoretically, for instance, by reduction of every special science to one deep science. I furthermore doubt whether there can be one method by which all of science can best work.

The crux of the argument is that it is erroneous to have a universalistic view of science when we consider the complexities inherent in the world. The explanations that these complexities require cannot suffice by, say, a reductionist approach which explains all phenomena in terms of laws of physics[2]. Cartwright also considers this reductionist view which regards physics "to be the governor of all matter" as wrong, and defends the thesis that the success of empirical theories of physics may argue for the truth of these theories but they are wrong for their universality (1999: 2-4). In other words, the laws of physics alone cannot give us the totality of the truth about the world. The various sub-disciplines of science have a role to play in developing theories and methods of investigating the reality of phenomena they are individually faced with. Although, the inter-disciplinary areas of science have shown that nature is relatively interwoven, this does not account for why a call for a unity of science is justified. The tendency to reduce science to a single approach, in most cases, physics, is to say that the laws of thermodynamics, for instance, are applicable to all the sciences. Such a claim is premature because it is not to say that the other sciences can be reduced to physics. On the contrary, the other sciences concern phenomena far and away richer in their physicality than the science of physics can ever make clear. To say, for instance, that thermo-dynamical principles might constrain what it would be reasonable to think in another science, does not suggest that what it is reasonable to say in the other sciences would all reduce to or be explained by the laws of thermodynamics. In this connection, a call for a unified method in science would not only undermine the necessity of specialising in a particular field of science, it would also extend to an imposition of a particular science, occidental science in this case, on other concerted forms of enquiries in other cultures. The recognition that there exist other standards of enquiries, with their unique ways of carrying out researches of various forms, underscores the methodological pluralism that I defend.

[2]Lee Smolin is baffled by the rigid attention focused on string theory in physics which appears as a unified theory in science. His conclusion is that the trend which supports one direction of research while other promising approaches are abandoned has tragic consequences as new discoveries in physics have come to a halt since the early 1980s (Smolin 2006).

2. Thesis II: Epistemic pluralism: The rationality question

A Universalist, such as Popper, claims that there is one single self-consistent way to characterise the rationality of science. Moreover, this one single self-consistent variety of pinnacle rationality is according to the Universalist the same everywhere and at all time. That is to say, the Universalists claim that what it is for people to be rational in inquiry is outside of culture. Popper, in particular, avers in his *Conjectures and Refutations* that "Western civilization is the only civilization which is based upon science ... the rationalist tradition ... represents the *only* practicable way of expanding our knowledge- conjectural or hypothetical knowledge, of course. There is no other way" (Popper 1957:151). This does seem to imply that any forms of concerted inquiry different from occidental (Western) science represent irrationality. Inferring from Popper's assertion therefore, we must consider whether Western science and culture are the standard for rationality. Again, we must consider whether there is any monolithic standard of rationality that can be read out of Western science, or whether rationality is a Western signature. Against this claim, I question here whether even within canonical science (occidental "science of the West") there is anything like unity of method. Looking more broadly at human inquiry, and choosing as examples some significant features of some other systematic indigenous knowledge, such as in Africa or in oriental cultures, I will argue here that inquiry that looks different again from this or that exemplary pocket of "Western science" that Popper alludes to can however be optimal in its cultural context and for purposes that are rooted in the particular culture. Whether the distinctive kind of inquiry, in Africa for instance, that I have in mind is science is perhaps a less important question to ask than what polylogue would look like between its practitioners and the practitioners of "occidental science". I will maintain that polylogue is needed, and that there would within it be learning in all directions.

Undoubtedly, some accomplishments that have happened to have happened specifically in the West are impressive and to that extent that they are objects that other cultures should look to with interest. My interest in Popper is about all this: Popper was interested to reflect on a special accomplishment, science, and learn from it about ideals for the mind and for society more generally. Although, I might say that Popper exaggerates the extent to which he identifies once and for all what is special about occidental science, and that he is particularly over-simplistic as a philosopher of science, but I agree, to some extent, and owe some respect even so to Popper's effort, and beyond that, to the special accomplishments to do with science in the West. What I endorse, however, is of a possibility

of polylogue on learning by the West from Africa or oriental cultures, not only learning by Africa or oriental cultures from the West.

In this connection, whether there is a single self-consistent mode of Western rationality that could be globalised, that occidental science epitomises, and that occidental science vindicates because occidental science is especially rationally impressive, I deny, not by denying the impressiveness of science in the West, but by questioning both its ostensible unity, and its ostensible monopoly on worth. Let it be clear that I do not deny the tremendous importance of the category of rationality in science, and particularly in philosophical discourses. A denial of this would defeat the very purpose of this engagement in a philosophical activity.

However, in part, I subscribe to Ludwig Wittgenstein and Peter Winch's positions both of whom have defended the relativity to cultures of rationality itself, a point of view I believe is apt for looking into science and for appreciating its variety, as well as for looking beyond occidental science to cultures of inquiry in other places and times. Wittgenstein uses his theory of the forms of life to argue that different forms of life have varied standards and as such the rationality of beliefs in each form of life is an issue of interest within each form of life of every culture. On his part, Winch says that Western scientific culture represents a standard of rationality that is just one among many, and in some cases members of different cultures with different standards of rationality could not possibly comprehend each other's rationality criteria or their application. Winch's claim is that Western scientific culture cannot be the ultimate paradigm upon which the yardstick of rationality is measured. While I share, partly, in the positions of both Wittgenstein and Winch that Western scientific culture represents a standard of rationality among many standards I think the absolute relativism that both contain is too strong for the position of pluralism that I defend which advocates a level of dialogue as a unity in the limit. I am particularly concerned about Winch's extreme position as it relates to logic within the Azande's cultural milieu. I do reckon that no culture has a monopoly of rationality but I posit that standard philosophical logic requires a level of expertise and literal mindedness. Winch's anthropological account fails to distinguish this standard philosophical logic from the form of logic that pervades the oral culture of the Azandes. I do not deny that variations of logical reasoning occur within different cultures. My argument is that logic as an intellectual study is essentially the business of the literal minded philosopher or scholar and it should be recognized as such.

On the above showing, the strong relativism that both Wittgenstein and Winch express undermines the idea of unity-in-the-limit of what scientific knowledge comes to be

known that constitutes the pluralism that I follow C.S Peirce to defend. I support Peirce that scientific knowledge is socio-culturally and historically specific, but that there is a quasi-stable arrangement for all knowledge to come together which signifies the idea of unity-in-the-limit; a view which allows one to expect that method will be different at different times and in connections with different inquiries or socio-cultural arrangements. My defense of pluralism also exemplifies the social character of scientific knowledge that Longino emphasizes in her attack upon the dichotomization of the rational and the social. Longino asserts the thesis that scientific knowledge is both social and rational. She is however concerned about the dichotomy of the modalities of knowledge, each of which is differently understood by empirical researchers and the normative researchers. This dichotomy is based on the illusion that there are just two positions regarding scientific knowledge (rational and not social; social and not rational). To her, a realignment of these understandings would bring about a new set of interpretations involving interdependence of cognitive agency, plurality of content, and contextuality of productive practices (Longino 2002: 203-204)[3]. This aligns with my position on worth of cross-cultural epistemic pluralism as it relates to how knowledge that deals with fundamental reality in every culture and how people of every culture perceive this reality can be mutually harnessed through a polylogue process of interaction.

I acknowledge that the phenomenon of occidental science is unique in a certain way however. It burgeons like inquiry nowhere else and at no other time. Somehow it is veritably explosively self-compounding and self-ramifying. That is a unique fact. Nevertheless, the development of knowledge across culture is, without doubt, indicative of the power of rationality that human societies are significantly built upon. The accomplishments that different cultures all over the world have attained in the thousands of years that people have lived in various societies only confirm that systematic indigenous knowledge is wrapped around rational enquiries about truth in nature. The criteria for what passes as standard of rational form of enquiry in occidental science cannot be used as a parameter of what can pass muster as knowledge in other cultures, as experiences, values, history and politics differ from one culture to the other.

There is no gainsaying the fact that occidental science is built upon a formal, both empirical and conceptual, structure of knowledge that is instrumental to the study of the world within the confines of Western perspective to things. Since what Western scientists do is to seek the truth about how the world works, undoubtedly, systematic indigenous societies

[3] For further reading on this see Helen E. Longino, *The Fate of knowledge,* chapters 1, 8 and 9.

too have their knowledge-production specialists, and have created ways in which for the knowledge produced and held by these specialists to be made relevant to social decision-making. However, conditions do not seem to obtain for the knowledge-making in systematic indigenous societies to be theoretical. It is more conceptual, empirical as well as spiritual. It is oriented to the production and retention of useful descriptive knowledge, and not oriented towards literal-minded *explanation*. It takes a mytho-poetic form, for that is a condition of its being memorable, by strictly oral means. It becomes impressive in its extent and usefulness, but is nonetheless limited in its extent by the limited capacity.

One important feature of mytho-poetic inquiry, that is, its form reflects its being part of oral arts of memory method of enquiry which favourably complements others in systematic indigenous knowledge, is that it strongly possesses ardent explanatory function, and that it is aimed for a rationally systematic ultimate form. Mytho-poetic consciousness is spiritual as a matter of course, and mystical too unless one hangs a very rationalist understanding upon what 'mystical' means. Reactions may trail this as voodooism but it is no more than the abstract idea of *nous* (which sees knowledge as the perception of the mental rather than the physical) that is associated with the mystic philosophy of Plotinus. Historical records have, in fact, shown that mysticism or religiosity does not in any way hinder the progress of knowledge as Western societies were still largely religious while science progressed there.

So, the embrace of the mytho-poetic mode of enquiry that is still associated with systematic indigenous knowledge in Africa, in particular, is a furtherance of the claim that the spiritual is incidental to the physical. Since the spiritual is believed to affect physical phenomena traditional African enquirers do not find them unimportant in the field of enquiry. The Logical Positivists verificationist theory and Popper's demarcation principle do not in any way canonically apply to the systematic indigenous knowledge in Africa. African mode of enquiry does consider as important phenomena that are not empirically verifiable. Even, those metaphysical or psychological issues that Popper regards as pseudoscience have equal relevance in the scheme of indigenous mode of enquiry in African epistemology. In view of this, what is favourably considered as a mode of inquiry in the African sense is not separated from the empirical, material, mechanical, psychological, art, supernatural, religious or the spiritual. This is why if we consider the explanations that African intellections give to causal events, for instance, we would discover a difference in approach from that of the West. The Western scientist is interested in the explanation of empirical causality of what makes event 'A' to cause event 'B'. The specialist African knowledge enquirer is involved with what can

be called 'agentive causation'. Typically, oral memory arts have as backbone a fabric of myths. Myths are narratives, involving agents. Agentive causation is what makes for narrative. The knowledge for which mnemonics arts are provided via or within the myths picks up as part of its form the myths' attribution of causal agency to its protagonists. The rainbow is defined as God's covenant for example, or as offspring to wonder and mother of love. This is agentive causality: the kind that can figure in stories, with agents, most of them human or humanlike, e.g. ancestors or gods.

3. Value of cross-cultural polylogue: The argument

The focus here is to establish that there is a broad spectrum of epistemological approaches to the study of nature not limited to occidental science. One main feature of occidental science is the ways it vaults commitment to reason and ardent literal-mindedness. This is its greatest strength rather than a weakness. However, this is unaffordable to a people that use oral means to hold onto its knowledge; as well as to criticise the indigenous knowledge-making practices. These people are not liable to producing burgeoning explanatory knowledge at the explosive pace of scientific knowledge development in the West. However, in a relative degree, each is inferior to the other with respect to a desideratum that the other holds dear and needs to hold dear. This is why I defend the thesis of the value of cross-cultural polylogue. polylogue is needed among specialists, scientists and even philosophers of different systematic indigenous knowledge in order to learn about variations of thinking in various cultural thoughts.

My argument is that each tradition will become aware of the need to reject or obliterate some of its former thinking, by virtue of what it learns through polylogue, and in particular, by virtue of new criticism realised through polylogue. There are however certain preconditions and limitations to be considered, as well as expectable results of such a polylogue. Using Franz Wimmer's (1996) idea of intercultural philosophy as a model, there is the need to distinguish different grades and forms of the influence of one or more traditions upon other traditions and how this can translate to a cross-cultural polylogue. The statistics I am to use here emanate from my understanding of the stages of contemporary scientific developments in four (4) basic traditions "A, B, C, D" to be examined and distinguished. For purposes of illustration, traditions A= occident, B= East Asia, C= Middle East, D= Africa. The following models illustrate whether there might be unilateral or bilateral influences of one tradition over the others and how a polylogue can be achieved. The models can be distinguished as follows.

Model 1: Unilateral centristic influence:

A ↄ ~[(B. C). D]

In this model, the possibility of a polylogue among the four traditions is not visible as tradition A sees the remaining traditions B, C and D as inferior to it, and hence to be eliminated and replaced. Traditions B, C, and D also stand apart from each other. In the case of tradition A, its task is the cultural extension of its influence over others in order to eliminate and replace B, C, and D. This can be labeled as cultural imperialism, Euro-centrism, Westernization, colonization or civilization. These labels can be predicated on a certain moral order seen as 'the white man's burden'. This burden is based on the assumption that it was the responsibility of the West to bring the benefits of civilization to the rest of the world. As such, Western superior morality applies universally regardless of race, cultural reality, political affinity, nationality etc. This assertion enjoyed the torrent supports of Lucien Levy Bruhl (1985: 63) and G.W.F Hegel in *Philosophy of History* (1956: 93) who standardized the colonial discourse when they both commissioned rationality as a Western signature, and thus granting what they termed mystic or prelogical thinking to non-Western peoples.

Model 2: Unilateral and transitive influence:

{[(A ↄ B) . (A ↄ C)] . (A ↄ D)}. B ↄ C

In this model, for the tradition A every other tradition remains inferior; B ignores D, C also ignores D. The influence of tradition A continues to extend on B, C and D. No polylogues are visible, except for tradition B which extends a hand of fellowship to C and consequently influences C with concepts partly derived from A.

Model 3: Partially bilateral influence: the period of dialogues

{[(A ↄ B) . (A ↄ C)] . [(B ↄ C) . (B ↄ D)]} ↄ [(C ↄ D) . (A ↄ D)]

Partially bilateral influences are processes of selective acculturation. For tradition A, some other traditions are not inferior any longer, but *exotic.* The same holds for B, C, and D in an increasing manner, but mutual influencing are not yet complete. This stage represents a polylogue among all relevant traditions with the partial exclusion of D which B still stands apart from.

Model 4: Complete bilateral influence: the period of polylogues

{[(A כ B) . (A כ C) (A כ D)] . [(B כ C) . (B כ D)]} כ (C כ D)

This is the stage where the value of cross-cultural polylogue is appreciated. For every tradition to be different is exotic: the consequent form of a polylogue. This stage symbolizes that every tradition has unique and distinct and multiple forms of inquiry. What is impressive is that the distinctiveness in each tradition would enhance polylogue among them. The knowledge that can be gained in occidental science, for instance, stands to inform those other systematic kinds of inquiry in new ways as well as stands to inform occidental science in new ways.

Conclusion

To ask whether there is a possibility of a cross-cultural polylogue in science as well as in knowledge in general is to beg the question. The evidence of divergent cultural traditions and what is distinctive in each can be used to establish the thesis of pluralism in different kinds of inquiry. A kind of inquiry which aims to provide answers that are intended to be universally true would ostensibly undermine the linguistic and conceptual tools that are also valuable in other traditions and cultures. This is the value with respect to the possibility and necessity of cross-cultural polylogue among all traditions. A suitable process of attaining this is to ensure that issues and questions concerning reality, man and the universe are not understood only under the purview of Euro-centrism, for instance. This presupposes that many other traditions have their diverse understandings of the subject matter. What can achieve a mutually bilateral understanding is the possibility of a cross- cultural polylogue.

References:

Bruhl, Lucien Levy. (1985), How Natives Think, Princeton, N.J: Princeton University Press.

Cartwright, Nancy. (1999), The Dappled World: A Study of the Boundaries of Science, Cambridge: Cambridge University Press.

Hegel, G.W.F. (1956), The Philosophy of History, trans. J.Sibree, New York: Dover Publications.

Kellert, Stephen. (2006), "Disciplinary Pluralism for Science Studies" in Stephen H. Kellert, Helen E. Longino and Kenneth Waters (eds), Scientific Pluralism, Minneapolis and London: University of Minnesota Press.

Longino, E. Helen. (2002), The Fate of knowledge, New Jersey: Princeton University Press.

Neurath, Otto. (1934), "Pseudorationalismus der Falsfikation" in Erkenntnis 5.

Popper, Karl. (1957), The Poverty of Historicism, London: Routledge and Kegan Paul

Smolin, Lee. (2006), The Trouble with Physics: The Rise f String Theory, the Fall of a Science and What Comes Next, London: Penguin Books.

Wimmer, M. Franz, (1996) "Is Intercultural Philosophy a New Branch or a New Orientation in Philosophy?" in D'Souza, Gregory (ed.): Interculturality of Philosophy and Religion. Bangalore: National Biblical Catechetical and Liturgical Centre, pp. 45-57.